

20050-00003.ST25.txt

<110> NEXGEN BIOTECHNOLOGIES, INC.
 SHONG, Min-Ho
 LEE, Sun
 YOO, Jae-Geun
 JIN, Seok-Min

<120> Production of Transformed Plants Expressing Thyroid Stimulating Hormone Receptor

<130> 20050-00003

<150> KR2002-38064
 <151> 2002-07-02

<150> PCT/KR2003/001308
 <151> 2003-07-02

<160> 2

<170> KopatentIn 1.71

<210> 1
 <211> 2292
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (1)..(2289)

<400> 1

atg	agg	ccg	gcg	gac	ttg	ctg	cag	ctg	gtg	ctg	ctg	ctc	gac	ctg	ccc	48
Met	Arg	Pro	Ala	Asp	Leu	Leu	Gln	Leu	Val	Leu	Leu	Leu	Asp	Leu	Pro	
1				5					10					15		
agg	gac	ctg	ggc	gga	atg	ggg	tgt	tcg	tct	cca	ccc	tgc	gag	tgc	cat	96
Arg	Asp	Leu	Gly	Gly	Met	Gly	Cys	Ser	Ser	Pro	Pro	Cys	Glu	Cys	His	
			20					25					30			
cag	gag	gag	gac	ttc	aga	gtc	acc	tgc	aag	gat	att	caa	cgc	atc	ccc	144
Gln	Glu	Glu	Asp	Phe	Arg	Val	Thr	Cys	Lys	Asp	Ile	Gln	Arg	Ile	Pro	
			35				40					45				
agc	tta	ccg	ccc	agt	acg	cag	act	ctg	aag	ctt	att	gag	act	cac	ctg	192
Ser	Leu	Pro	Pro	Ser	Thr	Gln	Thr	Leu	Lys	Leu	Ile	Glu	Thr	His	Leu	
	50					55					60					
aga	act	att	cca	agt	cat	gca	ttt	tct	aat	ctg	ccc	aat	att	tcc	aga	240
Arg	Thr	Ile	Pro	Ser	His	Ala	Phe	Ser	Asn	Leu	Pro	Asn	Ile	Ser	Arg	
	65				70				75						80	
atc	tac	gta	tct	ata	gat	gtg	act	ctg	cag	cag	ctg	gaa	tca	cac	tcc	288
Ile	Tyr	Val	Ser	Ile	Asp	Val	Thr	Leu	Gln	Gln	Leu	Glu	Ser	His	Ser	
				85				90						95		
ttc	tac	aat	ttg	agt	aaa	gtg	act	cac	ata	gaa	att	cgg	aat	acc	agg	336
Phe	Tyr	Asn	Leu	Ser	Lys	Val	Thr	His	Ile	Glu	Ile	Arg	Asn	Thr	Arg	
			100					105					110			
aac	tta	act	tac	ata	gac	cct	gat	gcc	ctc	aaa	gag	ctc	ccc	ctc	cta	384
Asn	Leu	Thr	Tyr	Ile	Asp	Pro	Asp	Ala	Leu	Lys	Glu	Leu	Pro	Leu	Leu	
		115					120					125				

20050-00003.ST25.txt

aag tcc ttg gca ttt tca aac act gga ctt aaa atg ttc cct gac ctg Lys Ser Leu Ala Phe Ser Asn Thr Gly Leu Lys Met Phe Pro Asp Leu 130 135 140	432
acc aaa gtt tat tcc act gat ata ttc ttt ata ctt gaa att aca gac Thr Lys Val Tyr Ser Thr Asp Ile Phe Phe Ile Leu Glu Ile Thr Asp 145 150 155 160	480
aac cct tac atg acg tca atc cct gtg aat gct ttt cag gga cta tgc Asn Pro Tyr Met Thr Ser Ile Pro Val Asn Ala Phe Gln Gly Leu Cys 165 170 175	528
aat gaa acc ttg aca ctg aag ctg tac aac aat ggc ttt act tca gtc Asn Glu Thr Leu Thr Leu Lys Leu Tyr Asn Asn Gly Phe Thr Ser Val 180 185 190	576
caa gga tat gat ttc ttt ggg aca aag ctg gat gct gtt tac cta aac Gln Gly Tyr Asp Phe Phe Gly Thr Lys Leu Asp Ala Val Tyr Leu Asn 195 200 205	624
aag aat aaa tac ctg aca gtt att gac aaa gat gca ttt gga gga gta Lys Asn Lys Tyr Leu Thr Val Ile Asp Lys Asp Ala Phe Gly Gly Val 210 215 220	672
tac agt gga cca agc ttg ctg gac gtg tct caa acc agt gtc act gcc Tyr Ser Gly Pro Ser Leu Leu Asp Val Ser Gln Thr Ser Val Thr Ala 225 230 235 240	720
ctt cca tcc aaa ggc ctg gag cac ctg aag gaa ctg ata gca aga aac Leu Pro Ser Lys Gly Leu Glu His Leu Lys Glu Leu Ile Ala Arg Asn 245 250 255	768
agc tgg act ctt aag aaa ctt gca ctt tcc ttg agt ttc ctt cac ctc Ser Trp Thr Leu Lys Lys Leu Ala Leu Ser Leu Ser Phe Leu His Leu 260 265 270	816
aca cgg gct gac ctt tct tac cca agc cac tgc tgt gct ttt aag aat Thr Arg Ala Asp Leu Ser Tyr Pro Ser His Cys Cys Ala Phe Lys Asn 275 280 285	864
cag aag aaa atc aga gga atc ctt gag tcc ttg atg tgt aat gag agc Gln Lys Lys Ile Arg Gly Ile Leu Glu Ser Leu Met Cys Asn Glu Ser 290 295 300	912
agt atc gag acg ttg cgc cag aga aaa tct gtg aat gcc ttg aat agc Ser Ile Glu Thr Leu Arg Gln Arg Lys Ser Val Asn Ala Leu Asn Ser 305 310 315 320	960
ccc ctc cac cag gaa tat gaa gag aat ctg ggt gac agc att gtt ggg Pro Leu His Gln Glu Tyr Glu Glu Asn Leu Gly Asp Ser Ile Val Gly 325 330 335	1008
tac aag gaa aag tcc aag ttc cag gat act cat aac aac gct cat tat Tyr Lys Glu Lys Ser Lys Phe Gln Asp Thr His Asn Asn Ala His Tyr 340 345 350	1056
tac gtc ttc ttt gaa gaa caa gag gat gag atc att ggt ttt ggc cag Tyr Val Phe Phe Glu Glu Gln Glu Asp Glu Ile Ile Gly Phe Gly Gln 355 360 365	1104
gag ctc aaa aac ccc cag gaa gag act cta caa gct ttt gac agc cat Glu Leu Lys Asn Pro Gln Glu Glu Thr Leu Gln Ala Phe Asp Ser His 370 375 380	1152

20050-00003.ST25.txt

tat Tyr 385	gac Asp	tac Tyr	acc Thr	ata Ile	tgt Cys 390	ggg Gly	gac Asp	agt Ser	gaa Glu	gac Asp 395	atg Met	gtg Val	tgt Cys	acc Thr	ccc Pro 400	1200
aag Lys	tcc Ser	gat Asp	gag Glu	ttc Phe 405	aac Asn	ccg Pro	tgt Cys	gaa Glu	gac Asp 410	ata Ile	atg Met	ggc Gly	tac Tyr	aag Lys 415	ttc Phe	1248
ctg Leu	aga Arg	att Ile	gtg Val 420	gtg Val	tgg Trp	ttc Phe	gtt Val	agt Ser 425	ctg Leu	ctg Leu	gct Ala	ctc Leu	ctg Leu 430	ggc Gly	aat Asn	1296
gtc Val	ttt Phe	gtc Val 435	ctg Leu	ctt Leu	att Ile	ctc Leu	ctc Leu 440	acc Thr	agc Ser	cac His	tac Tyr	aaa Lys 445	ctg Leu	aac Asn	gtc Val	1344
ccc Pro	cgc Arg 450	ttt Phe	ctc Leu	atg Met	tgc Cys	aac Asn 455	ctg Leu	gcc Ala	ttt Phe	gcg Ala	gat Asp 460	ttc Phe	tgc Cys	atg Met	ggg Gly	1392
atg Met 465	tac Tyr	ctg Leu	ctc Leu	ctc Leu	atc Ile 470	gcc Ala	tct Ser	gta Val	gac Asp	ctc Leu 475	tac Tyr	act Thr	cac His	tct Ser	gag Glu 480	1440
tac Tyr	tac Tyr	aac Asn	cat His	gcc Ala 485	atc Ile	gac Asp	tgg Trp	cag Gln	aca Thr 490	ggc Gly	cct Pro	ggg Gly	tgc Cys	aac Asn 495	acg Thr	1488
gct Ala	ggt Gly	ttc Phe	ttc Phe 500	act Thr	gtc Val	ttt Phe	gca Ala 505	agc Ser	gag Glu	tta Leu	tcg Ser	gtg Val	tat Tyr 510	acg Thr	ctg Leu	1536
acg Thr	gtc Val	atc Ile 515	acc Thr	ctg Leu	gag Glu	cgc Arg	tgg Trp 520	tat Tyr	gcc Ala	atc Ile	acc Thr	ttc Phe 525	gcc Ala	atg Met	gcc Ala	1584
ctg Leu	gac Asp 530	cgg Arg	aag Lys	atc Ile	cgc Arg	ctc Leu 535	agg Arg	cac His	gca Ala	tgt Cys	gcc Ala 540	atc Ile	atg Met	gtt Val	ggg Gly	1632
ggc Gly 545	tgg Trp	gtt Val	tgc Cys	tgc Cys	ttc Phe 550	ctt Leu	ctc Leu	gcc Ala	ctg Leu	ctt Leu 555	cct Pro	ttg Leu	gtg Val	gga Gly	ata Ile 560	1680
agt Ser	agc Ser	tat Tyr	gcc Ala	aaa Lys 565	gtc Val	agt Ser	atc Ile	tgc Cys	ctg Leu 570	ccc Pro	atg Met	gac Asp	acc Thr	gag Glu 575	acc Thr	1728
cct Pro	ctt Leu	gct Ala	ctg Leu 580	gca Ala	tat Tyr	att Ile	gtt Val	ttt Phe 585	gtt Val	ctg Leu	acg Thr	ctc Leu	aac Asn 590	ata Ile	gtt Val	1776
gcc Ala	ttc Phe	gtc Val 595	atc Ile	gtc Val	tgc Cys	tgc Cys	tgt Cys 600	tat Tyr	gtg Val	aag Lys	atc Ile	tac Tyr 605	atc Ile	aca Thr	gtc Val	1824
cga Arg 610	aat Asn	ccg Pro	cac His	aac Asn	cca Pro	ggg Gly 615	gac Asp	aaa Lys	gat Asp	acc Thr	aaa Lys 620	att Ile	gcc Ala	aag Lys	agg Arg	1872
atg Met	gct Ala	gtg Val	ttg Leu	atc Ile	ttc Phe	acc Thr	gac Asp	ttc Phe	acg Thr	tgc Cys	atg Met	gcc Ala	cca Pro	atc Ile	tca Ser	1920

20050-00003.ST25.txt

625		630		635		640	
ttc tat gct gtg tca gca att ctg aac aag cct ctc atc act gtt agc							1968
Phe Tyr Ala Val Ser Ala Ile Leu Asn Lys Pro Leu Ile Thr Val Ser							
		645		650		655	
aac tcc aaa atc ttg ctg gta ctc ttc tat cca att aac tcc tgt gcc							2016
Asn Ser Lys Ile Leu Leu Val Leu Phe Tyr Pro Ile Asn Ser Cys Ala							
		660		665		670	
aat cca ttc ctc tat gct att ttc acc aag gcc ttc cag agg gat gtg							2064
Asn Pro Phe Leu Tyr Ala Ile Phe Thr Lys Ala Phe Gln Arg Asp Val							
		675		680		685	
ttc atc cta ctc agc aag ttt ggc atc tgt aaa cgc cag gct cag gca							2112
Phe Ile Leu Leu Ser Lys Phe Gly Ile Cys Lys Arg Gln Ala Gln Ala							
		690		695		700	
tac cgg ggg cag agg gtt cct cca aag aac agc act gat att cag gtt							2160
Tyr Arg Gly Gln Arg Val Pro Pro Lys Asn Ser Thr Asp Ile Gln Val							
		705		710		715	720
caa aag gtt acc cac gac atg agg cag ggt ctc cac aac atg gaa gat							2208
Gln Lys Val Thr His Asp Met Arg Gln Gly Leu His Asn Met Glu Asp							
		725		730		735	
gtc tat gaa ctg att gaa aac tcc cat cta acc cca aag aag caa ggc							2256
Val Tyr Glu Leu Ile Glu Asn Ser His Leu Thr Pro Lys Lys Gln Gly							
		740		745		750	
caa atc tca gaa gag tat atg caa acg gtt ttg						t aa	2292
Gln Ile Ser Glu Glu Tyr Met Gln Thr Val Leu							
		755		760			

<210> 2
 <211> 763
 <212> PRT
 <213> Homo sapiens

<400> 2
 Met Arg Pro Ala Asp Leu Leu Gln Leu Val Leu Leu Leu Asp Leu Pro
 1 5 10 15
 Arg Asp Leu Gly Gly Met Gly Cys Ser Ser Pro Pro Cys Glu Cys His
 20 25 30
 Gln Glu Glu Asp Phe Arg Val Thr Cys Lys Asp Ile Gln Arg Ile Pro
 35 40 45
 Ser Leu Pro Pro Ser Thr Gln Thr Leu Lys Leu Ile Glu Thr His Leu
 50 55 60
 Arg Thr Ile Pro Ser His Ala Phe Ser Asn Leu Pro Asn Ile Ser Arg
 65 70 75 80
 Ile Tyr Val Ser Ile Asp Val Thr Leu Gln Gln Leu Glu Ser His Ser
 85 90 95
 Phe Tyr Asn Leu Ser Lys Val Thr His Ile Glu Ile Arg Asn Thr Arg
 100 105 110
 Asn Leu Thr Tyr Ile Asp Pro Asp Ala Leu Lys Glu Leu Pro Leu Leu

115 120 125
 Lys Ser Leu Ala Phe Ser Asn Thr Gly Leu Lys Met Phe Pro Asp Leu
 130 135 140
 Thr Lys Val Tyr Ser Thr Asp Ile Phe Phe Ile Leu Glu Ile Thr Asp
 145 150 155 160
 Asn Pro Tyr Met Thr Ser Ile Pro Val Asn Ala Phe Gln Gly Leu Cys
 165 170 175
 Asn Glu Thr Leu Thr Leu Lys Leu Tyr Asn Asn Gly Phe Thr Ser Val
 180 185 190
 Gln Gly Tyr Asp Phe Phe Gly Thr Lys Leu Asp Ala Val Tyr Leu Asn
 195 200 205
 Lys Asn Lys Tyr Leu Thr Val Ile Asp Lys Asp Ala Phe Gly Gly Val
 210 215 220
 Tyr Ser Gly Pro Ser Leu Leu Asp Val Ser Gln Thr Ser Val Thr Ala
 225 230 235 240
 Leu Pro Ser Lys Gly Leu Glu His Leu Lys Glu Leu Ile Ala Arg Asn
 245 250 255
 Ser Trp Thr Leu Lys Lys Leu Ala Leu Ser Leu Ser Phe Leu His Leu
 260 265 270
 Thr Arg Ala Asp Leu Ser Tyr Pro Ser His Cys Cys Ala Phe Lys Asn
 275 280 285
 Gln Lys Lys Ile Arg Gly Ile Leu Glu Ser Leu Met Cys Asn Glu Ser
 290 295 300
 Ser Ile Glu Thr Leu Arg Gln Arg Lys Ser Val Asn Ala Leu Asn Ser
 305 310 315 320
 Pro Leu His Gln Glu Tyr Glu Glu Asn Leu Gly Asp Ser Ile Val Gly
 325 330 335
 Tyr Lys Glu Lys Ser Lys Phe Gln Asp Thr His Asn Asn Ala His Tyr
 340 345 350
 Tyr Val Phe Phe Glu Glu Gln Glu Asp Glu Ile Ile Gly Phe Gly Gln
 355 360 365
 Glu Leu Lys Asn Pro Gln Glu Glu Thr Leu Gln Ala Phe Asp Ser His
 370 375 380
 Tyr Asp Tyr Thr Ile Cys Gly Asp Ser Glu Asp Met Val Cys Thr Pro
 385 390 395 400
 Lys Ser Asp Glu Phe Asn Pro Cys Glu Asp Ile Met Gly Tyr Lys Phe
 405 410 415
 Leu Arg Ile Val Val Trp Phe Val Ser Leu Leu Ala Leu Leu Gly Asn
 420 425 430
 Val Phe Val Leu Leu Ile Leu Leu Thr Ser His Tyr Lys Leu Asn Val
 435 440 445
 Pro Arg Phe Leu Met Cys Asn Leu Ala Phe Ala Asp Phe Cys Met Gly
 Page 5

450 455
Met Tyr Leu Leu Leu Ile Ala Ser Val Asp Leu Tyr Thr His Ser Glu
465 470 475 480
Tyr Tyr Asn His Ala Ile Asp Trp Gln Thr Gly Pro Gly Cys Asn Thr
485 490 495
Ala Gly Phe Phe Thr Val Phe Ala Ser Glu Leu Ser Val Tyr Thr Leu
500 505 510
Thr Val Ile Thr Leu Glu Arg Trp Tyr Ala Ile Thr Phe Ala Met Ala
515 520 525
Leu Asp Arg Lys Ile Arg Leu Arg His Ala Cys Ala Ile Met Val Gly
530 535 540
Gly Trp Val Cys Cys Phe Leu Leu Ala Leu Leu Pro Leu Val Gly Ile
545 550 555 560
Ser Ser Tyr Ala Lys Val Ser Ile Cys Leu Pro Met Asp Thr Glu Thr
565 570 575
Pro Leu Ala Leu Ala Tyr Ile Val Phe Val Leu Thr Leu Asn Ile Val
580 585 590
Ala Phe Val Ile Val Cys Cys Cys Tyr Val Lys Ile Tyr Ile Thr Val
595 600 605
Arg Asn Pro His Asn Pro Gly Asp Lys Asp Thr Lys Ile Ala Lys Arg
610 615 620
Met Ala Val Leu Ile Phe Thr Asp Phe Thr Cys Met Ala Pro Ile Ser
625 630 635 640
Phe Tyr Ala Val Ser Ala Ile Leu Asn Lys Pro Leu Ile Thr Val Ser
645 650 655
Asn Ser Lys Ile Leu Leu Val Leu Phe Tyr Pro Ile Asn Ser Cys Ala
660 665 670
Asn Pro Phe Leu Tyr Ala Ile Phe Thr Lys Ala Phe Gln Arg Asp Val
675 680 685
Phe Ile Leu Leu Ser Lys Phe Gly Ile Cys Lys Arg Gln Ala Gln Ala
690 695 700
Tyr Arg Gly Gln Arg Val Pro Pro Lys Asn Ser Thr Asp Ile Gln Val
705 710 715 720
Gln Lys Val Thr His Asp Met Arg Gln Gly Leu His Asn Met Glu Asp
725 730 735
Val Tyr Glu Leu Ile Glu Asn Ser His Leu Thr Pro Lys Lys Gln Gly
740 745 750
Gln Ile Ser Glu Glu Tyr Met Gln Thr Val Leu
755 760